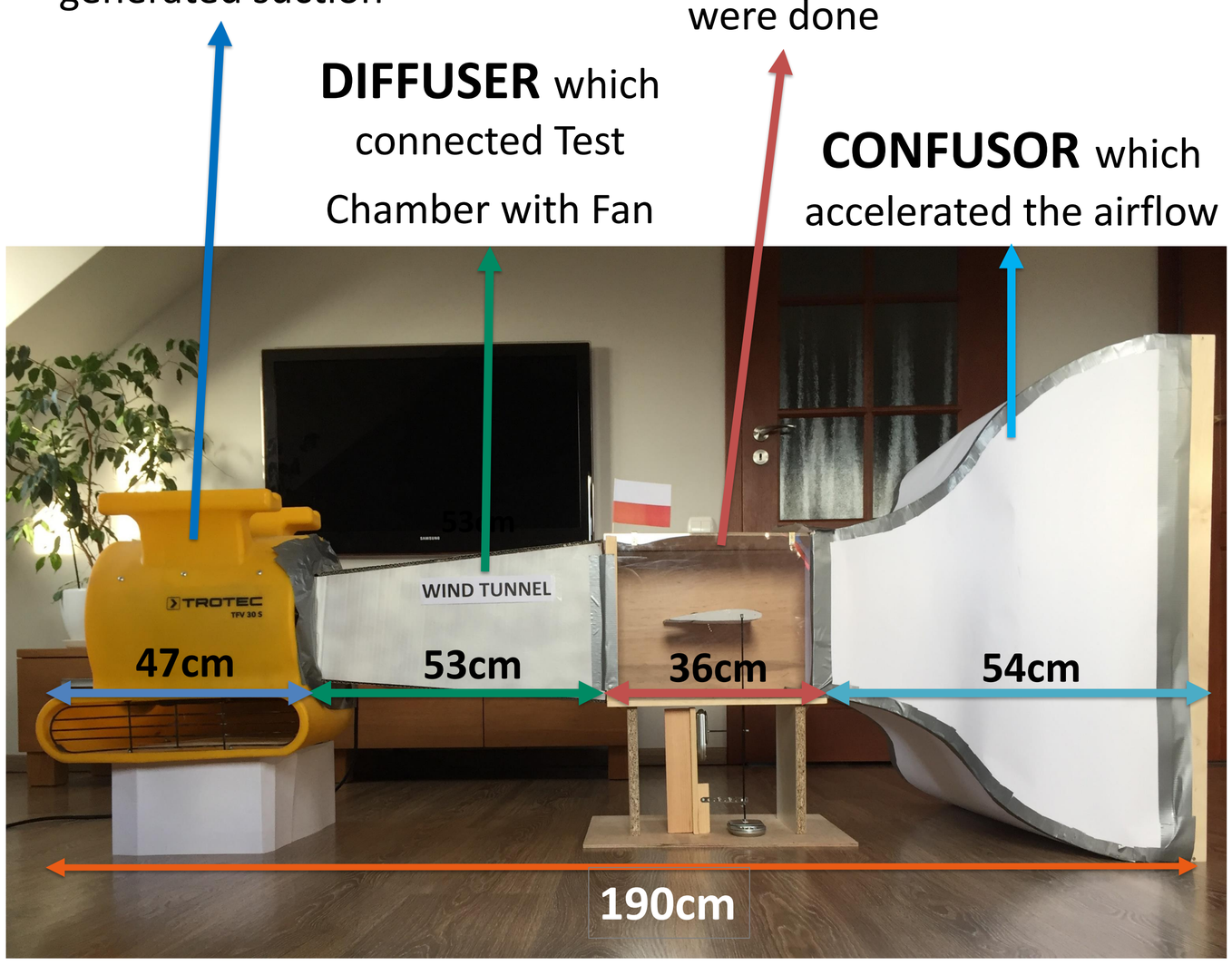
Sustainable Development in Science Education

Elżbieta Nowak, Bartosz Piechocki| 4th Secondary Grammar School | Poznań | Poland

Safe flight – innovative modification of a wing

Project created by: Bartosz Piechocki
Supervised by: MEng Elżbieta Nowak

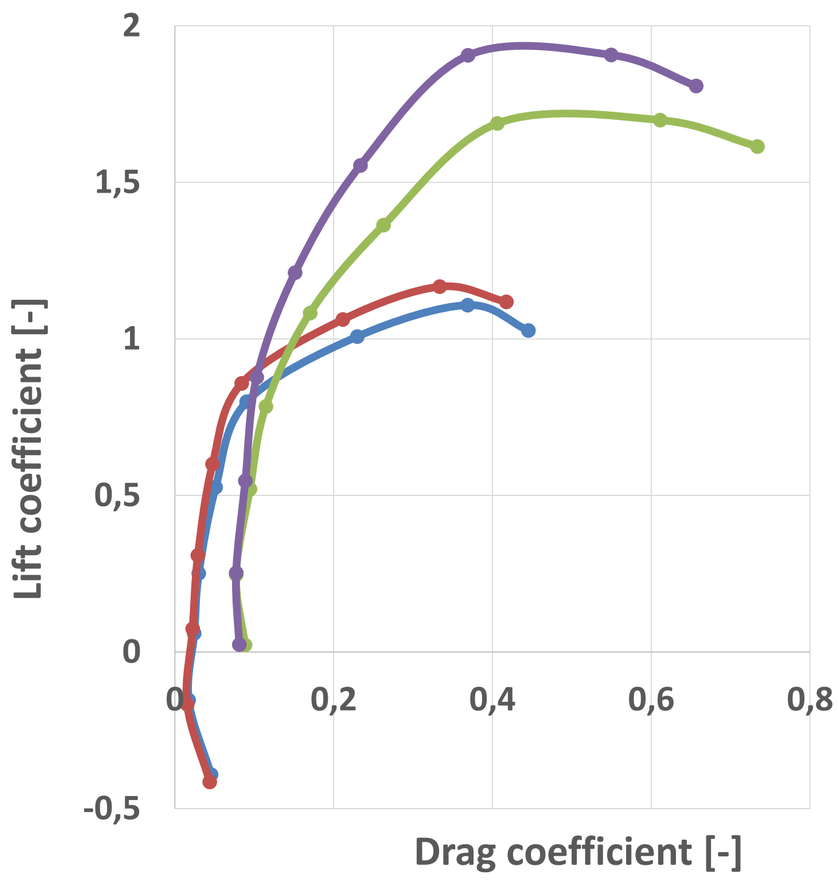
Nowadays the aviation industry is developing quickly and everybody wants to fly safer and cheaper. That is why I came up with the **idea of a wing modification**. A standard plane has gaps between a wing and an aileron or a flap, but my modification covers these gaps (see photo below). **The model of a wing was tested in the wind tunnel which I created** (see photo on the right). Below the photo of the wind tunnel there is a chart which shows the results of my investigation (**1500 measurements were made**). There can be clearly seen the improve in aerodynamic characteristics. **Modified wing increased lift and decreased drag of the wing** (the higher the line on the chart goes, the better).

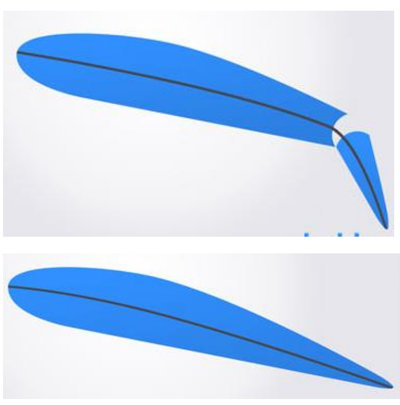


The idea for a wing modification

Smooth transition between the wing and the flap/aileron

Polar curve of an airfoil; $v = 6\frac{m}{s}$





Conclusion: Modified wing effectively improves aerodynamic characteristics. This solution decreases fuel consumption but most importantly, increases safety of a flight.